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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,938	12/31/2001	Yukari Aoki	35.C16091	7016

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EXAMINER	
BERNATZ, KEVIN M	
ART UNIT	**PAPER NUMBER**
1773	

DATE MAILED: 04/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/029,938	AOKI, YUKARI	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2 and 5 is/are rejected.

7)☒ Claim(s) 3 and 4 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/26/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendments to the specification and claim 1, filed on December 15, 2003, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is confusing because applicants' recite that the "domain wall displacement layer, said switching layer and said recording layer are coupled by exchange coupling such that ***the magnetization of said domain wall displacement***

layer corresponds to the magnetization of said recording layer at a temperature not higher than the Curie temperature of said switching layer" (emphasis added) and also "at a temperature close to the Curie temperature of the switching layer, the saturation magnetization of said domain wall displacement layer and the said recording layer ***are in opposite directions***" (emphasis added). It is unclear what scope applicants intend to convey by "corresponds" when used in combination with "in opposite directions".

Based on the as-filed disclosure (esp. Figures 1A, 5A and 6A), the Examiner notes that there are two apparent interpretations which could be applied. The first interpretation is that "corresponds" merely refers to the fact that the layers are exchange coupled and the magnetization of the one layer "corresponds" to the magnetization of the other layer (i.e. are directly coupled to each other). The second interpretation is that the magnetization *directions* of the two layers are the same at at least one temperature below the Curie temperature of the switching layer. For purposes of evaluating the prior art, the Examiner has applied the second interpretation, but recommends that applicants consider amending the claim language to better define the intended scope of "corresponds".

Claim Rejections - 35 USC § 102

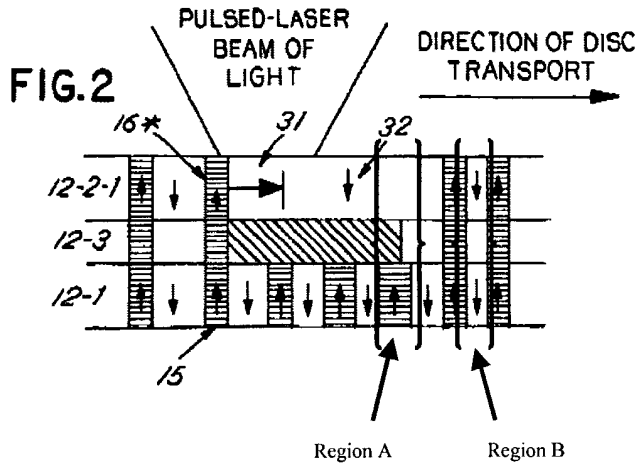
6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yonezawa (U.S. Patent No. 6,122,229), as evidenced by applicants' admissions.

Regarding claim 1, Yonezawa discloses a domain wall displacement (DWDD) magneto-optical recording medium (*Figure 2 and col. 4, lines 39 – 52*) for irradiation with a light spot to form a temperature distribution therein which displaces domain walls and expands recorded domains for reproducing recorded information (*Figure 2 and col. 3, line 62 bridging col. 4, line 8*) comprising a domain wall displacement (DWD) layer having a Curie temperature higher than a peak temperature (*Figure 2*) for displacing said domain walls (*Figure 2*), a recording layer for storing information (*col. 4, lines 38 – 52*), and a switching layer arranged between said DWD layer and said recording layer and having a Curie temperature lower than those of the latter two layers (*Figure 2 and col. 3, lines 5 – 30*), wherein said DWD layer, said switching layer and said recording layer are coupled by exchange coupling such that the magnetization of said DWD layer corresponds to the magnetization of said recording layer at a temperature not higher than the Curie temperature of said switching layer (*region B in Figure 2 reproduced below*) and wherein when the DWD layer and the recording layer are coupled by exchange coupling at a temperature close to the Curie temperature of the switching

layer (*region A in Figure 2 reproduced below*), the saturation magnetization of said DWD layer and the said recording layer are in opposite directions (*Figure 2*).



Regarding claim 5, Yonezawa discloses a reproducing method comprising a step of forming a predetermined temperature distribution (*Figure 2 and col. 3, lines 5 – 30*) having a temperature zone exceeding the Curie temperature of said switching layer on said magneto-optical recording medium by means of a laser beam (*ibid*), a step of breaking the exchange coupling between said DWD layer and said recording layer in a region of the temperature zone exceeding the Curie temperature of said switching layer (*ibid*) and displacing a domain wall formed in said DWD layer towards the high temperature side along the temperature gradient of the temperature distribution (*Figure 2, elements 15* and 31*), and a step of detecting information stored in said recording layer utilizing the laser beam reflected from said medium (*col. 3, lines 5 – 30*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or

substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the limitation "wherein said domain wall displacement layer has a smaller domain wall coercivity than said recording layer" is deemed to be inherently present in the disclosed prior art, as evidenced by Figure 2. The Examiner notes that the domain wall in the DWD layer (*layer 12-2-1*) shifts within the temperature region obtained from heating with the laser beam, but the domain walls in the recording layer (*layer 12-1*) do not. The Examiner deems that this is clear evidence that the DWD layer has a smaller domain wall coercivity since the domain wall coercivity is a measure of how strongly the domain walls are "fixed" (*applicants' specification, pages 15 – 16*).

Therefore, in addition to the above disclosed limitations, the presently claimed property of "wherein said domain wall displacement layer has a smaller domain wall coercivity than said recording layer" would have inherently been present because

Yonezawa discloses the domain walls of the DWD layer moving at a specific temperature while the domain walls of the recording layer do not, which is a clear indication that the domain wall coercivity of the DWD layer is lower than that of the recording layer.

Claim Rejections - 35 USC § 103

8. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa as evidenced by applicants' admissions as applied above, and further in view of Hashimoto et al. (JP 2000-100006 A). See Hashimoto et al. (U.S. Patent No. 6,221,219 B1), which is the U.S. Equivalent of JP '006 A.

Yonezawa and applicants' admissions are relied upon as described above.

In the event that the domain wall coercivity of the DWD layer is not inherently lower than the domain wall coercivity of the recording layer, the Examiner notes that Hashimoto et al. teaches that when using a DWDD type magneto-optic medium with a displacement layer possessing a smaller domain wall coercivity than the recording layer, the domain preservability of the memory layer is improved (*col. 2, lines 8 – 11 and 45 – 62*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yonezawa as evidenced by applicants' admissions to utilize a DWD layer having a domain wall coercivity smaller than the domain wall coercivity of the recording layer in the event that such a limitation is not inherently present, as taught by Hashimoto et al., since such a structure can be

used to produce a DWDD type magneto-optical recording medium with improved domain preservability of the memory layer.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa as evidenced by applicants' admissions as applied above, and further in view of Awano et al. (PCT WO 99/39341). See Awano et al. (U.S. Patent No. 6,633,514 B1) which is the U.S. equivalent to PCT '341.

Yonezawa and applicants' admissions are relied upon as described above.

Yonezawa fails to disclose a DWD layer with a rare earth dominant structure at and near the Curie temperature of the switching layer or a recording layer with a transition metal dominant structure at and near the Curie temperature of the switching layer.

However, Awano et al. discloses that displacement and memory layers in a DWDD recording medium are functionally equivalent to reproducing and recording layers, respectively, in non-DWDD media (*col. 64, lines 51 – 58*). Awano et al. further disclose that reproducing layers are typically formed from rare-earth rich compositions (*col. 58, lines 51 – 61*) and recording layers are typically formed from transition metal rich compositions (*col. 49, lines 13 – 23*) to control the magnetic and magneto-optic properties of the layers, such as the magnetization directions and coercivities (*col. 14, line 59 bridging col. 15, line 7; col. 20, line 28 bridging col. 21, line 30; and col. 24, line 42 bridging col. 25, line 54*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yonezawa as evidenced by applicants' admissions to include a DWD and recording layer meeting applicants' claimed sublattice magnetization limitations as taught by Awano et al., since such a structure is taught in the art to be used to control the magnetic and magneto-optic properties of the medium.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa as evidenced by applicants' admissions and in view of Hashimoto et al. as applied above, and further in view of Awano et al. (PCT WO 99/39341). See Awano et al. (U.S. Patent No. 6,633,514 B1) which is the U.S. equivalent to PCT '341.

Yonezawa, Hashimoto et al. and applicants' admissions are relied upon as described above.

None of the above disclose a DWD layer with a rare earth dominant structure at and near the Curie temperature of the switching layer or a recording layer with a transition metal dominant structure at and near the Curie temperature of the switching layer.

However, Awano et al. discloses that displacement and memory layers in a DWDD recording medium are functionally equivalent to reproducing and recording layers, respectively, in non-DWDD media (*col. 64, lines 51 – 58*). Awano et al. further disclose that reproducing layers are typically formed from rare-earth rich compositions (*col. 58, lines 51 – 61*) and recording layers are typically formed from transition metal

rich compositions (*col. 49, lines 13 – 23*) to control the magnetic and magneto-optic properties of the layers, such as the magnetization directions and coercivities (*col. 14, line 59 bridging col. 15, line 7; col. 20, line 28 bridging col. 21, line 30; and col. 24, line 42 bridging col. 25, line 54*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yonezawa as evidenced by applicants' admissions to include a DWD and recording layer meeting applicants' claimed sublattice magnetization limitations as taught by Awano et al., since such a structure is taught in the art to be used to control the magnetic and magneto-optic properties of the medium.

Allowable Subject Matter

11. The following is a statement of reasons for the indication of allowable subject matter: Claim 3 is allowable for the reasons of record (Paragraph 9 of the Office Action mailed September 10, 2003). Claim 4 is deemed allowable since the prior art of record fails to teach or suggest a DWD layer that is transition-metal dominant and a recording layer which is rare-earth dominant.

Response to Arguments

12. The rejection of claims 1, 2 and 5 under 35 U.S.C § 102(b) or 103(a) – Yonezawa as evidenced by applicants' admissions, alone or in view of various references

Applicant(s) arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Applicants' amendment resulted in embodiments not previously considered (i.e. "a domain wall displacement ...for reproducing recorded information", "having a Curie

temperature higher than a peak temperature", said domain wall displacement layer has a smaller domain wall coercivity than said recording layer") which necessitated the new grounds of rejection, and hence the finality of this action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
April 8, 2004

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